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ABSTRACT

This report summarizes a November 1985 meeting at which members of the Apple Education Advisory Council addressed the issues involved in training teachers and administrators on the best ways to use computers in education. In their discussions, Advisory Council members first summarized the roles that are played by each type of organization involved in training educators about computers: the schools themselves, state and local governments, schools of education, computer manufacturers, and textbook publishers. The participants then described model approaches to technology training with which they were familiar. Finally, the groups detailed specific needs of the organizations for additional assistance, and suggested appropriate actions to meet those needs. (EW)

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Learning Tomorrow

Teacher and Administrator Training in Technology

Apple Education Advisory Council
Summer 1986

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November 15, 1985

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Preface

Dear Reader:

Welcome to Apple's new education quarterly, *Learning Tomorrow*. This publication is designed to share new information on education and technology with the broad education community, including leaders in instruction, administration, public policy, research, and industry.

These monographs are the result of Education Advisory Council (EAC) meetings at Apple Computer. The EAC is a group of experts from education and industry who meet to address topics of concern in education and technology. Each quarter the topic changes, and therefore so does the membership. The format of the publication will reflect those changes.

This first issue resulted from a one-day meeting on Teacher and Administrator Training in Technology held in November 1985. The next two issues will address Long-Range Technology Planning and Multimedia in Education.

We hope you find the information useful, and encourage you to suggest future topics.

Sincerely,

Sueann Ambron

Sueann Ambron, Ed.D.
Managing Editor

Introduction

Teacher and Administrator Training in Technology

The personal computer is a very powerful tool, which means that the learning environment created when children have microcomputers and appropriate software is very different from a textbook-driven curriculum. Children working with technological tools can learn how to "take control" of information in ways they couldn't with previous tools: asking questions, developing problem-solving strategies, and selecting ways to communicate and share results.

The development of the personal computer has tremendous importance to education. But this technology will only make an impact if teachers and administrators have an accurate vision of how it can be used in the school curriculum. Before teachers and administrators can reconceptualize curriculum in the light of the new technology, they need to become proficient in its use. They also need training and assistance with the implementation of computer technology in their schools.

In its November 1985 meeting, the Apple Education Advisory Council addressed the issues involved in training teachers and administrators on the best ways to use computers in education.

Sueann Ambron, manager of K–12 market development at Apple, welcomed the group to Apple with this quote from a recent Ford Foundation report:

There is no quick-fix formula...to help teachers in schools use technology, or to assure that technology is put to its best use for students. Even put to its best use, it cannot be expected to remedy the problems of the schools. But in this moment in our history, if there is a tool for renewal, it is the microcomputer.

In their discussions, Education Advisory Council members first summarized the roles that are played by each type of organization involved in training educators about computers: the schools themselves, state and local governments, schools of education, computer manufacturers, and textbook publishers. Then, various participants described model approaches to technology training with which they were familiar. Finally, the groups determined specific needs of the organizations for additional assistance, and suggested appropriate actions to meet those needs.

Summaries

Local Level (Districts and Individual Schools)

Role

Curriculum is primarily a local responsibility. Principals, teachers, and staff are responsible for setting the goals and objectives for the students in a school. The local school and school district provides direct training and assistance to teachers. School districts and local schools are establishing new guidelines for curriculum in light of new technologies.

Model approaches

In Alaska, school-based teams are working together to integrate technology into the curriculum, and into instructional assessment programs. Teachers are looking at how computer software might be used to fill in the gaps left by conventional methods. Computer-based instruction and productivity tools are viewed as essential pieces of the instructional package.

Districts in many areas (such as Cupertino, California; Fairfax, Virginia; and Montgomery County, Maryland) have developed guidelines for computer education. In some districts, efforts are in place to look at various subject areas and determine how the curriculum may need to change in light of the technology. (The impact of word processing on the language arts curriculum is one example.)

At Teacher Education Computer (TEC) Center VIII in California, groups of teachers are receiving mini-grants to conduct teacher training workshops. There, teachers are provided with the resources to get additional training. They then go out to schools to share with other teachers (in the same subject area and at the same level) what they have learned about how to integrate technology into the curriculum in such subjects as math, science, social studies, and language arts.

Apple education dealers throughout the U.S. are providing practical, hands-on training for teachers. They are also assisting teachers with continued support as the teachers try to keep up with the changing technology.

Through school-based grants available in California from state general funds, local schools and school districts are creating plans that involve more effective use of technology in their curriculum . In many cases, these plans involve rethinking the traditional role of the teacher as the main provider of information. Technology can often assist in this process. Therefore, the training offered by the California TEC centers increasingly focuses on the role of the teacher as the person who makes decisions about the curriculum and the use of technology to support it.

Needs

There is a need to go beyond the teachers who quickly became comfortable with the new technology (the "early adopters"), to reach those who are still unconvinced. The teacher is the essential person in the classrooom; the technology should assist the teacher, not replace him or her. We need to find examples of technology that will empower the teacher, and in turn, the student. We have to identify the problems teachers face, and describe how technology can be part of their solution. For example:

- What tools can assist with time-consuming teacher tasks (such as record keeping, lesson planning, notes to parents, and crossword puzzle creation)?
- How can software programs assist children in the classroom with specific learning needs, such as remedial work, practice with spelling, and enrichment for advanced learners?
- How can technology provide a solution for the child who is frequently absent from school?

There is a need to educate the instructional leaders (such as curriculum coordinators) at the school and district levels. In conjunction with this, administrators, superintendents, and principals need to understand how technology can be used to enhance and support the goals and objectives of the district curriculum.

There is a need to reach all 14,000 school districts in the United States.

Next steps

Use a telecommunications network to share planning efforts among teachers, administrators, and superintendents. Allow for communication between decision makers and administrators.

Learn from the lessons of previous in-service efforts and continue to conduct staff development programs. (See the appendix.)

Use videotapes and teacher support materials to share the best examples of teachers using technology.

Put on "road shows" of experienced teachers to help inform other potential technology users.

State Government

Role

The state government is primarily responsible for conducting educational activities and providing general curriculum leadership.

Model approaches

The California State Department of Education's Technology in Curriculum Project provides one model for state participation in technology training. Four programs were initiated in order to rethink the curriculum in math, science, social studies, and language arts. Panels of educators representing state, district, school, and university groups met to reconceptualize the curriculum objectives. Recommendations for software, videotapes, and lesson plans were made in the final reports. Training workshops for teachers are scheduled to implement the recommendations.

Needs

There is a need to share plans among the states. There is also a need to assist states that are just starting to plan for curriculum changes.

Next steps

Develop a communications network for state education departments and leading state education officials.

Share the Alaska Staff Development Model for In-service Training and the California AB803 local grants program (which requires planning as a condition of funding) with the departments of education in other states.

Bring together the technology educators in a state with the associations that plan in-service training for administrators. In California, cooperatively plan in-service training for principals, using the resources of the Administrative Training Centers and the TEC Centers.

Federal Government

Role

Education is a national concern. The federal government sponsors research, evaluates projects, and disseminates information.

Model approaches

The federal government has assisted in the development of large-scale curriculum projects, such as the multimedia science-education program *The Voyage of the Mimi*.

Needs

There is a need for federal education leaders (such as top officials of the U.S. Department of Education) to understand the implications that the developing technology has for the curriculum.

There is a need to disseminate information across school districts and state departments of education about effective implementation of technology in the curriculum.

There is a need to include technology training in teacher-training efforts sponsored by the U.S. Department of Education.

Next steps

Invite federal education officials to Apple Computer. Share with them some of the new developments in educational computing. Have them tour schools that are successfully integrating technology into their curriculum and showing significant gains in achievement.

Examine the evaluation and dissemination efforts of the Department of Education with regard to technology and curriculum initiatives.

Schools and Colleges of Education

Role

University schools of education, and colleges of teacher education provide instructional leadership through research, teaching, and service to schools with regard to such basic curriculum questions as these:

- What is the purpose of educational schools?
- How should schools be organized and evaluated?
- How should teachers and administrators be educated?

Model approaches

Several schools of education are conducting research on the process of change and implementation of technology, such as "Understanding Educational Change" at the University of Alaska; "Improving the Productivity of Principals through Technology" at the University of San Francisco; and John Henry Becker's "Survey of Computer Use in Schools" at Johns Hopkins University.

Schools of education are adding new courses to prepare teachers to serve as computer coordinators and software developers. They are also offering in-service instruction to teachers and administrators. Pre-service teacher education programs are reevaluating curriculum in light of new technology tools, and are adding coursework and new competency requirements.

Over 30 programs offering an M.A. in educational computing have been initiated at colleges and universities around the country. Several doctorate programs in this subject have been started as well.

Some students entering schools of education will come from college campuses where there is strong high-technology use, such as Brown University, Carnegie-Mellon University, and the University of Michigan. Even prior to their teacher-preparation coursework, these students will have skills in using the new technology.

Needs

The model approaches described above are not very widespread in colleges and schools of education. Thus, there is a strong need to assist the policy makers (deans of schools of education, and directors of teacher education programs) in learning about the technology that is—and will be—available to new teachers.

There is a need to understand the questions policymakers in schools of education will have, including:

- What are their roles as instructional leaders in an information age?
- What are the implications of technology for the curriculum in teacher education colleges and schools of education?
- What should the training of teachers involve? Should schools of education prepare teachers with a vision of the classroom of tomorrow, or prepare them for where schools are today?
- How can teachers with skills in curriculum and instructional technology become a resource to schools of education?
- How can a tenured faculty be retrained to deal with the new tools?

There is a need for continued research and evaluation on technology and education. Research on the "computer-rich classroom environment" is needed. How the effectiveness of technology in the curriculum is measured will make a difference in terms of dissemination and adoption by others. Superintendents, principals, and teachers want compelling evidence that these tools and systems make a difference in teacher productivity and student achievement. The research and evaluation initiatives should be led by the universities with assistance from the federal government and private foundations.

Next steps

Hold another Education Advisory Council with deans of schools of education, directors of teacher education programs, and representatives of teacher education accrediting groups (such as the National Council for the Accreditation of Teacher Educators and NASTEC on the national level). Highlight some of the exemplary grant efforts of Apple's Education Affairs program. Classroom teachers who are using technology effectively could share examples of their lessons and objectives. Schools of education could share ideas about how to make changes within their organizations. This meeting could feature:

- Videotapes of classroom teachers successfully incorporating technology into their curriculum.
- University faculty members and deans or directors of teacher education programs describing the process they used to change their curriculum for pre-service teachers and administrators.
- Descriptions of model teacher education centers where new teachers can learn how to function in a classroom with state-of-the-art learning tools.
- Outstanding teachers sharing their stories about working with teachers at the local level to change the school curriculum. Meeting participants could suggest ways in which these teachers could become resources to universities or schools of education.
- The final stages of an education grants competition for schools and colleges of education. Following the guidelines of the Apple Education Affairs Grants program, eligible projects would show how teacher-education and educational-administration departments can revise courses and student teaching experiences to better prepare teachers for working with children and technology in an information-based society.

Create a communications network for pre-service teacher educators, student teachers, technology mentor teachers, and others interested in teacher education and technology. Advertise this teacher education network to teacher education colleges and universities around the country.

Present examples of how the curriculum should be changed in view of new technologies at the annual meetings of AACTE (American Association of Colleges of Teacher Education) and ATE (Association of Teacher Educators). Follow up with articles in the *Journal of Teacher Education* and similar publications.

Continue the Apple Teacher Training Scholarship Program, and expand it to allow administrators to receive scholarships, as well. Disseminate information about the colleges and universities that make classes available to teachers.

Computer Manufacturers

Role

To provide learning environments that assist children and teachers in becoming more productive workers.

To provide examples of how these learning environments can be used in schools and classrooms.

To demonstrate how technology can enhance the lives of children in ways that were never before possible, with special-education tools, student communication networks, and resource directories for community services.

Model approaches

Apple Computer's AppleWorks™ software is a highly successful package that has applications throughout the educational environment. It assists children and teachers in managing, organizing, and communicating information more effectively.

Needs

Computer manufacturers have to understand the needs of teachers and computer coordinators in order to design products that will meet those needs. For example, teachers want large-screen monitors to use for demonstrations, yet projection units are too expensive for most school budgets. Teachers also want the ability to network the students in the classroom for certain activities.

Next steps

In order to meet the needs of educators, Apple and other computer manufacturers could implement the following actions:

Develop a data base of schools with exemplary curriculum programs that use technology effectively, and facilitate visits to those schools. This would allow high qualified master teachers and lab schools to serve as examples of successful integration of technology into the curriculum.

Lobby state legislatures to include technological training as a requirement for new teachers.

Use video technology to provide demonstrations of how the curriculum can be enhanced through technology. Apple could, for example, provide sample lessons to go with the programs that operate on Apple® II computers in schools.

Share examples of how graphics and communications technologies can assist in the productivity of students and teachers.

Facilitate grants for demonstration classrooms at colleges and schools of education (such as through the Apple Education Affairs department).

Encourage dealers to develop partnerships with local schools, schools of education, and district superintendents and staff.

Continue programs that empower teachers directly, such as the Apple Teacher Training Scholarship Program.

Extend the Apple University Consortium to include teacher education colleges and universities around the country.

Work with other groups to develop a high school consortium, in which teachers could share ideas about using AppleWorks for data base, word processing, and spreadsheet applications for themselves and their students.

Set up partnerships with agencies that are interested in designing ongoing programs for helping school staff members integrate technology into their programs.

Textbook Publishers

Role

To provide curriculum materials to support classroom learning.

Model approaches

A lot of quality educational software has been developed, which teachers are finding very useful.

Needs

Basal-textbook publishers and software developers should be brought together to provide curriculum materials that have both software and print components.

Next steps

Publishers must understand how data bases and word processing templates can enhance their products for classroom learning.

None reported.

Current events

Apple's Follow-up

As a result of the ideas generated at this Education Advisory Council meeting, Apple Computer developed two projects to increase the availability and effectiveness of pre-service and in-service training on the use of computers in the classroom.

Staff Development Workshops
During the 1986 school year, Apple joined with Sunburst, MECC, and Closing the Gap to offer a series of in-service workshops to help teachers and administrators integrate computers into their work.

The workshops were given by Apple field sales personnel to education customers around the country. Subjects included "Spreadsheet Skills for Administrators," "Data-Base Skills for Educators," "Microcomputers in Special Education," and "Problem Solving."

Conference on Technology and Teacher Education
In August 1986, Apple and the University of California at Berkeley cosponsored an invitational conference to explore the topics discussed at the first EAC meeting in depth.

Computer experts, deans and faculties of schools of education, and leaders in instructional technology gathered to discuss recent developments in teacher education and educational technology, and to formulate policy recommendations that will lead to needed changes in the preparation of our nation's teachers.

A report from this conference will be forthcoming.

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